

FIGURE 1

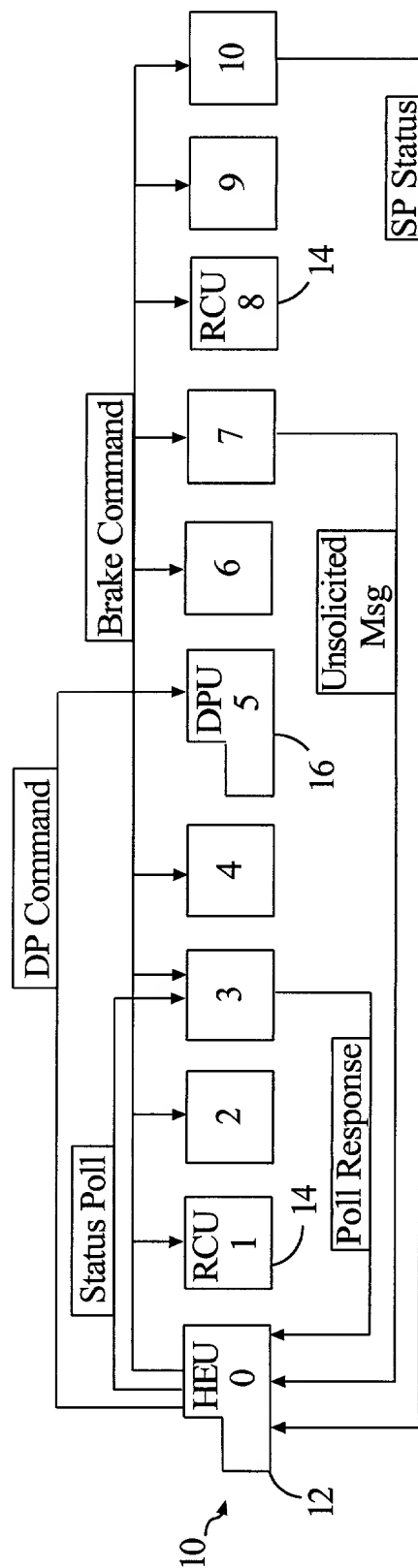


FIGURE 2

FIG. 3 is a block diagram of a system 30 for controlling a brake valve 60. The system 30 includes a battery 32, a generator 34, a voltage regulator 36, an ITC engine 38, a transmitter 42, a receiver 44, a valve interface 40, a brake cylinder 62, auxiliary/emergency reservoirs 64, and a brake pipe 66. The battery 32 and generator 34 are connected to the voltage regulator 36, which is connected to the ITC engine 38. The ITC engine 38 is connected to the transmitter 42 and the receiver 44. The transmitter 42 is connected to the receiver 44 via a communication link 50. The receiver 44 is connected to the ITC engine 38. The ITC engine 38 is connected to the valve interface 40. The valve interface 40 is connected to the brake cylinder 62, the auxiliary/emergency reservoirs 64, and the brake pipe 66. The brake cylinder 62 is connected to the auxiliary/emergency reservoirs 64. The auxiliary/emergency reservoirs 64 are connected to the brake pipe 66. The brake pipe 66 is connected to the brake valve 60. The brake valve 60 is connected to the vent.

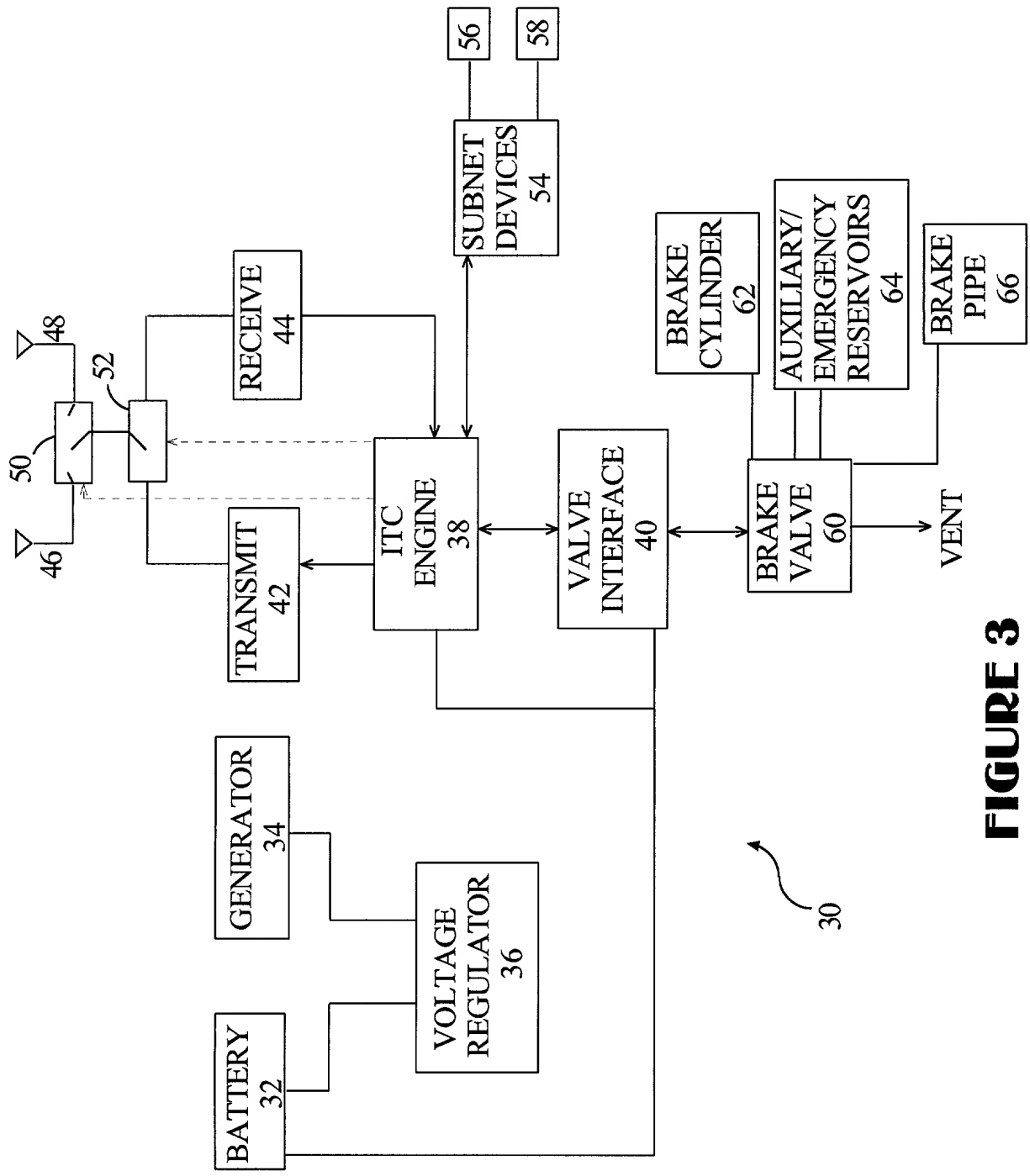


FIGURE 3

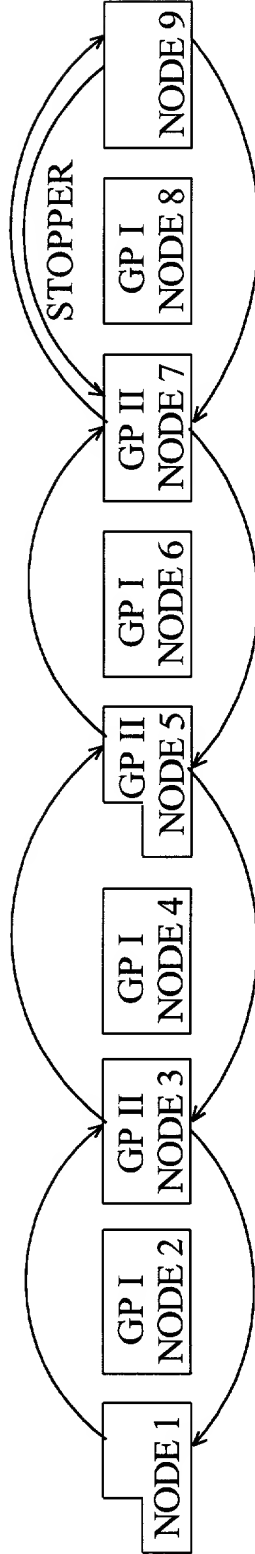


FIGURE 4

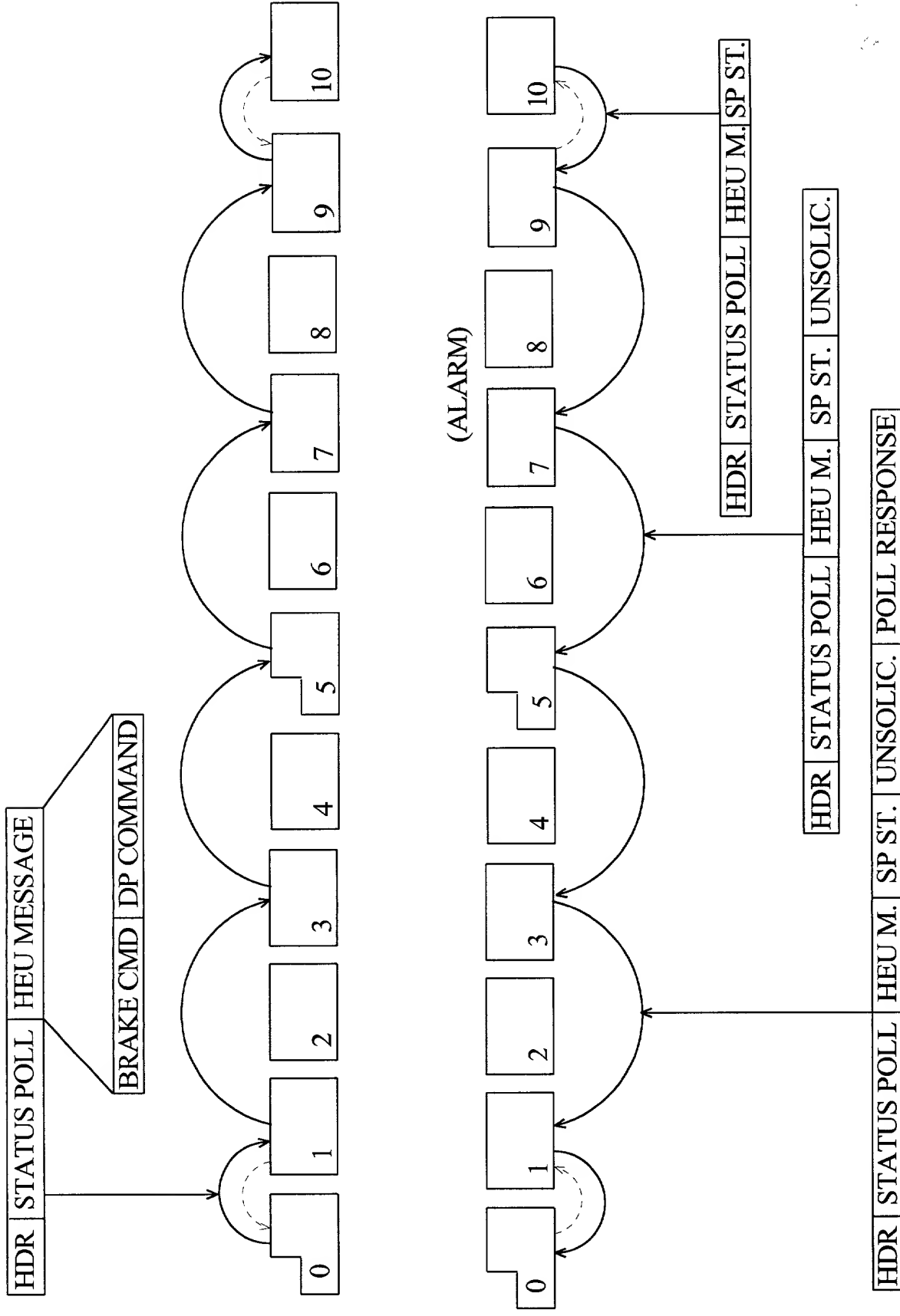


FIGURE 5

Relay Group Identification Number Table							
Groups (nominal hop distance)	ID no	A	B	C	D	E	F
Default Single Relay Group	0	0 0x00	-	-	-	-	-
Single Relay Group Solution	1	1 0x01	-	-	-	-	-
Two Relay Group Solution	2	2 0x02	3 0x03	-	-	-	-
Three Relay Group Solution	3	4 0x04	5 0x05	6 0x06	-	-	-
Four Relay Group Solution	4	7 0x07	8 0x08	9 0x09	10 0x0A	-	-
Five Relay Group Solution	5	11 0x0B	12 0x0C	13 0x0D	14 0x0E	15 0x0F	-
Six Relay Group Solution	6	16 0x10	17 0x11	18 0x12	19 0x13	20 0x14	21 0x15

FIGURE 6

Byte	Bits	Name	Description
0-3	1	Write-over Flag	1 = write over, 0 = no write over.
	1	Rebound Flag	1 = wrap at reversing node, 0= delete at reversing node.
	10	Source Address	Logical Node Address of the ADU's source
	10	Destination Address 1	First Logical Node Address in destination address range
	10	Destination Address 2	Last Logical Node Address in destination address range.
4	8	ADU Length	Length of current ADU (less the eight bytes of overhead.) This value is 0 - 64, or 0 - 255 for special code download ADUs.
5	8	Source Application ID	Defines the source application (to be used for addressing responses).
6	8	Destination Application ID	Defines the destination application.
7	8	ADU Type	Application specific identifier for the ADU.
8-n	-	Embedded ADU data	0 to 64 byte ADU data field (or 0 to 255 byte ADU data field for code download ADUs.)
n+1	8	Checksum	2's Complement checksum calculated on the entire packet

FIGURE 7

Byte	Bits	Name	Description
0-1	16	Circuit Identification Code (LSBs)	Low order 16 bits of the 24 bit circuit identification code for the communications circuit associated with the packet.
2	8	Circuit Identification Code (MSB)	High order 8 bits of the 24 bit circuit identification code for the communications circuit associated with the packet.
3	1	Token Type	1 = SMOKEN, 0 = Normal
3	1	reserved	Currently unused bit.
3	5	Sequence Count	Sequence count identifies each new token transmitted from pilot node.
3	1	Direction Flag	Marks packet as inbound or outbound, 1 = inbound.
4	4	Hop Distance	Value that, when added to the Destination Node Address, indicates the source of the transmission.
4-5	12	Hop Count	Hop count value for the current transmission of this packet.
6	1	Short Path Flag	Set for a non-SMOKEN token that was reversed before the reversing node.
6	5	Relay Group	Relay group associated with the packet.
6-7	10	Destination Node Address	Next node to relay current token for synchronous token, local node address for an asynchronous transmission.
8	2	reserved	Currently unused field.
8	6	ADU Count	Number of ADU's embedded in current RDU.
9-n	-	Embedded ADUs	Zero to sixty three embedded ADU elements.
n - (n+3)	32	Cyclic Redundancy Check (CRC)	Packet verification CRC based on CCITT standard algorithm.

FIGURE 8

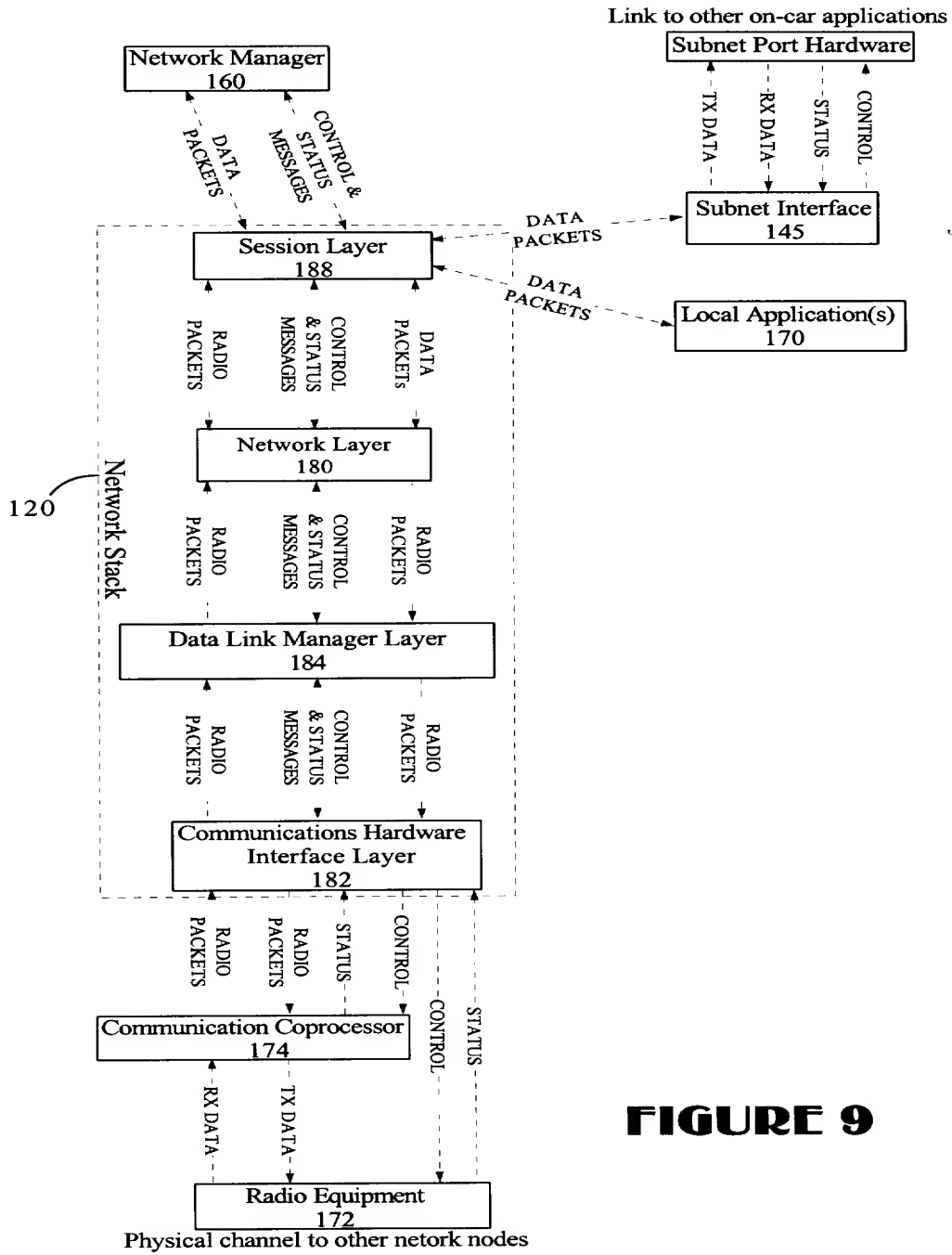


FIGURE 9